

Electrochemical element

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Inventor: YOSHINORI NISHIKITANI (JP); KEIZO IKAI (JP);
MASAAKI KOBAYASHI (JP)

Applicant: NIPPON MITSUBISHI OIL CORP (JP)

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Abstract of corresponding document: **EP1154311**

An electrochromic element comprises an ion conduction layer between two conducting substrates, at least one of which is transparent. The ion conduction layer contains an organic compound, which has both a structure exhibiting a cathodic electrochromic characteristic and a structure exhibiting an anodic electrochromic characteristic.

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Title Derwent

Electrochromic element for car mirrors and displays etc. contains organic compound which combines bipyridinium structure showing anodic electrochromic properties with metallocene structure showing cathodic electrochromic properties

Abstract Derwent

Novelty: Electrochromic element has an ion conductive layer between two conductive base plates, at least one of which is transparent. The element contains an organic compound which combines a structure showing anodic electrochromic properties with a structure showing cathodic electrochromic properties.

Use: Used in transparent elements such as light control glass, reflection elements such as anti-glare mirrors for e.g. vehicles and mirrors for ornaments, and display devices etc.

Advantage: Cheap color formers can be used. The element can be manufactured by a simple method and color tone can be changed.

Description of Drawing: The figure shows the element according to the invention. Transparent Base Plate (1) Transparent Electrode Layer (2) Ion Conductive Layer (3) Transparent or Reflective Electrode Layer (4) Base Plate (5) Seal Material (6) Electrode Region (8)

Technical Focus: ORGANIC CHEMISTRY Preferred Element: The structure showing cathodic electrochromic properties a bipyridinium ion pair structure of formula (I) A- and B- = halogen anion, ClO₄-, BF₄-, PF₆-, AsF₆-, CH₃COO- and CH₃(C₆H₄)SO₃-. The structure showing anodic electrochromic properties is a metallocene structure of formula (II) or (III) R₁-R₂ = 1-10C alkyl, alkenyl or aryl group, and, when aryl, the aryl group can form a cyclopentadienyl ring or condensed ring; m = an integer 0-4; n = an integer 0-4; M = Cr, Co, Fe, Mg, Ni, Os, Ru, V, X-Hf-Y, X-Mo-Y, X-Nb-Y, X-Ti-Y, X-V-Y or X-Zr-Y; X and Y = H, halogen or 1-12C alkyl group. Specific organic compounds are of formula (IV)-(VII) R₃, R₄ = 1-20C hydrocarbon group; R₅ = 1-20C hydrocarbon group selected from alkyl, cycloalkyl, alkenyl, aryl or aralkyl, 4-20C heterocyclyl group or one of these groups where one H atom is substituted.

Example: An example of the organic compound is 1-(4-ferrocenyl-butyl)-1'-4,4'-bipyridinium bis (tetrafluoroborate).

Assignee Derwent + PACO

NIPPON MITSUBISHI OIL CORP	NIOC-S
NIPPON OIL CO LTD	NIOC-S

Assignee Original

NIPPON MITSUBISHI OIL CORPORATION
NISHIKITANI, Yoshinori
IKAI, Keizo
KOBAYASHI, Masaaki
IMAFUKU, Hiroshi
MINAMI, Masaki
KUBO, Takaya
NIPPON MITSUBISHI OIL CORP
NIPPON MITSUBISHI OIL CORP
NIPPON MITSUBISHI OIL CORP
NIPPON MITSUBISHI OIL CORP
NIPPON MITSUBISHI OIL CORP
Nippon Mitsubishi Oil Corporation
Nippon Mitsubishi Oil Corporation

Nippon Mitsubishi Oil Corporation
 Nippon Mitsubishi Oil Corporation
 Nippon Mitsubishi Oil Corporation

Inventor Derwent

IAKI K	IGAI K
IKAI K	IMAFUKU H
KOBAYASHI M	KUBO T
MINAMI M	NISHIKITANI Y

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WO2000049454-A1	2000-08-24	JP2000305116-A	2000-11-02
JP2001114796-A	2001-04-24	JP2001172293-A	2001-06-26
JP2001181292-A	2001-07-03	JP2001181293-A	2001-07-03
EP1154311-A1	2001-11-14	US20020015214-A1	2002-02-07
KR2001102154-A	2001-11-15	CN1341232-A	2002-03-20
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Derwent Class

E11	E12	L03	P81	U14	V07
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Manual Code

E05-B01	E05-L	E05-M
E05-N	L03-G05C	L03-H05
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International Patent Classification (IPC)

IPC Symbol	IPC Rev.	Class Level	IPC Scope
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C07F-17/00	2006-01-01	I	C
C09B-57/00	2006-01-01	I	C
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G02F-1/01	2006-01-01	I	C
G02F-1/01	2006-01-01	I	C
C07F-15/02	2006-01-01	I	A
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C09B-57/00	2006-01-01	I	A
C09K-9/02	2006-01-01	I	A
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Drawing

